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SKYLAB - Water Depth Determination

Quarterly Progress Report
For Period 1 December 1974 to 28 February 1975

EREP Investigation 446
NASA Contract NAS9-13278

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SKYLAB - Water Depth Determination

Quarterly Progress Report For Period 1 December 1974 to 28 February 1975

This report describes the progress during the eighth quarterly period for EREP investigation 446 entitled Water Depth Determination. The objective is to use S-192 multispectral data along with S-190A and S-190B photography to determine quantitatively water depths that are hazardous to shipping.

The test sites are the western side of Puerto Rico and portions of the Great Lakes, particularly Lake Michigan and Lake Erie.

ACTIVITY

During this period an attempt was made to gauge the accuracy of the single-channel depth technique by means of a comparison of the calculated values with depth values read from coast to Geodetic Survey Chart 901. For this purpose four lines were drawn in the Escollo Negro area on the West Coast of Puerto Rico. Depth values were calculated at 81 points along each of these lines, and values were independently read from the chart at each point. The main features in the two sets of values seemed to correlate quite well with each other, although there was not quantitative agreement in all cases. The r.m.s. deviation between the two sets of values was approximately 4 meters, out of a maximum depth of about 24 meters. Much of this deviation is due to errors in reading the chart or mis-registration between the chart and calculated values. Some error is also expected in the calculated values due to the presence of clouds, which affect the surface-reflection signal, and to limitations of the single-channel technique (i.e., changes in bottom reflectivity and/or water turbidity). The multi-channel ratio technique could not be applied because of excessive noise in band 5 (.60-.65 μm).

Data tapes for the Lake Michigan test site have also been received and converted to ERIM format. The amount of water depth information on these tapes is limited, because of the steep bottom gradient and the relatively high water attenuation in Lake Michigan. Some sandbars are visible on the S-190B photography in the area south of Pentwater, Michigan. Evidence of these can also be found in the

S-192 scanner data, although they are just marginally within the resolution capability of the scanner. In the next quarter, we plan to do some densitometry of the high resolution S-190B photography as well as further analysis of the S-192 scanner data.

TRAVEL

None to report.

Respectfully submitted,

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